



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/646,816	09/22/2000	Klaus Abend	00-587	1570

7590 03/10/2004
Gregory P LaPointe
Bachman & LaPointe
900 Chapel Street Suite 1201
New Haven, CT 06510

EXAMINER

KIBLER, VIRGINIA M

ART UNIT PAPER NUMBER

2623

DATE MAILED: 03/10/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/646,816

Applicant(s)

ABEND, KLAUS

Examiner

Virginia M Kibler

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 1-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/22/00 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "**means**" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The disclosure is objected to because of the following informalities: "15 likewise," should be changed to "likewise" on page 2, para. 4, line 3; "Systems," should be changed to "systems," on page 3, para. 1, line 5; "ov.er" should be changed to "over" on page 3, para. 1, line 5; "view 30" should be changed to "view" on page 3, para. 1, line 6; "possible 35" should be changed to "possible" on page 3, para. 2, line 2; "aquired" should be changed to "acquire" on page 5, para. 1, line 2; "aquisiaton" should be changed to "acquisition" on page 5, para. 1, line 3; "Fig. 1" should be changed to "Fig. 2" on page 8, para. 3, line 1; "leading 5" should be changed to "leading" on page 8, para. 3, line 6; "can 10" should be changed to "can" on page 8, para. 4, line 2; "16, 161, 1611 can output" should be changed to "16, 16', 16'' can output" on page 9, para. 2, line 2.

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description: testing liquid 13a (Page 8, para. 5, line 2). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference signs not mentioned in the description: 15, 18, 19, 24, and 25. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference signs in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 1-15 are objected to because of the following informalities: “concentrating the dye at surface faults, concentrating the dye at surface faults” should be changed to “concentrating the dye at surface faults,” in claim 1, line 3; “at at least” should be changed to “at least” in claim 1, line 8. Appropriate correction is required.

Claims 2-15 are dependent on claim 1, and are therefore objected to.

Art Unit: 2623

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 2, 4-8, 10, 12, 14, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the evaluation logic" in line 11, "the optical image processing unit" in lines 11-12, and "the time period" in line 14. There are insufficient antecedent basis for these limitations in the claim.

Claim 2 recites the limitations "the selection" in line 3, "the indication" in line 3, "the test sequence" in line 4, and "the data" in line 4. There are insufficient antecedent basis for these limitations in the claim.

Claim 4 recites the limitations "the same physical orientation" in lines 2-3, "~~the~~ differences" in lines 8-9, and "~~the basis~~" in line 9. There are insufficient antecedent basis for these limitations in the claim.

Claim 5 recites the limitations "~~the image changes~~" in line 2, "~~the time difference~~" in line 2, and "the memory" in line 4. There are insufficient antecedent basis for these limitations in the claim.

Claim 6 recites the limitations "the time interval" in line 2, "the time difference" in line 2, and "the contrast change" in line 4. There are insufficient antecedent basis for these limitations in the claim.

Claim 7 recites the limitations “the system” in line 2 and “the measured-value processing unit” in lines 3-4. There are insufficient antecedent basis for these limitations in the claim.

Claim 8 recites the limitations “the geometric arrangement” in line 2, “the focus” in lines 2-3, “the function” in line 3, “the illuminating device” line 4, “the operativeness” in line 4, and “the liquids” in line 4. There are insufficient antecedent basis for these limitations in the claim.

Claim 10 recites the limitations “the bath data” in line 1; “the level” in line 2; and “the contamination” in line 2. There are insufficient antecedent basis for these limitations in the claim.

Claim 12 recites “the monitoring signals” in line 1 and “the measured-value processing unit” in line 2. There are insufficient antecedent basis for these limitations in the claim.

Claim 14 recites “the illumination intensity” in line 2, “the sensor sensitivity” in line 2, “the illumination monitoring sensors” in lines 2-3, “the testing agent” in lines 3-4, “the cleaning agent” in line 4, “the pickling agent” in line 5, “the geometric arrangement” in line 6, and “the focus” in line 6. There are insufficient antecedent basis for these limitations in the claim.

Claim 15 recites “the operativeness” in line 2 and “the overall system” in lines 2-3. There are insufficient antecedent basis for these limitations in the claim.

Regarding claims 1 and 14, the phrase “such as” in lines 19 and 6, respectively, renders the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorria et al. (5,408,104) in view of Gillard et al. (5,570,431).

Regarding claim 1, Gorria et al. ("Gorria") discloses a method of automatic fault detection by crack detection including making recordings (A1, A2) of the same workpiece at least two times (t1, t2) (Col. 2, lines 23-48), comparing the recordings produced at different times and evaluating the comparison by means (Col. 2, lines 49-56) of evaluation logic of an optical image processing unit (Col. 8, lines 38-51), outputting signals, by means of the evaluation logic which represent those changes in concentration over the time period in corresponding areas on the recordings which lie above a change threshold for a reference time difference (Col. 8, lines 52-68; Col. 11, lines 49-68), and assessing the signals output, taking into account workpiece-related parameters and testing-system related operating variables, to produce assessment variables relating to crack formation (Col. 5, lines 1-13). Gorria discloses detecting cracks by measuring appearance of colored stains or a noticeable change in color (Col. 1, lines 24-48), but does not specify using the dye penetrant method. However, Gillard et al. ("Gillard") teaches that it is known to use the dye penetrant method including treatment with penetrating agent for automatic fault detection (Col. 1, lines 18-56). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the crack detection

Art Unit: 2623

method disclosed by Gorria to include the dye penetrant method as taught by Gillard because it is well known in the art in order to provide a high contrast between crack indication and the article surface (Col. 3, lines 54-63).

Regarding claim 2, Gorria discloses setting windows and scanning the windows by means of the image recording device (Col. 12, lines 39-53), the selection and evaluation and indication of crack faults being automatically linked with the test sequence (Col. 11, lines 49-68) and the data obtained being processed in a computer (Col. 8, lines 9-31).

Regarding claim 6, Gorria discloses if the cycle time of the testing sequence is not fixed, the time interval is defined by measuring the time difference between two recordings of the image recording device and assigning this time period to the contrast change determined the time interval (Col. 9-Col. 10).

Regarding claim 3, Gorria discloses the image recording device produces recordings at time intervals that are fixedly predetermined (Col. 4, lines 16-24).

Regarding claim 4, Gorria discloses means of a conveying device, the workpiece 1 is lead with the same physical orientation (Figure 1) past at least two recording devices arranged at a distance from one another (Col. 7, lines 32-46), so that recordings made by the various image recording devices of the workpiece with a constant physical orientation but at different times are produced and the recordings from the various recording devices are compared with one another by evaluation logic and the differences between the recordings, signals are formed on the basis of the time intervals that have elapsed between the recordings (Col. 8, lines 38-51).

Regarding claim 5, Gorria discloses reference data for the image changes and data relating to the time difference between the respective time periods that have elapsed between the

Art Unit: 2623

recordings are stored in the memory of the evaluation logic (Col. 6, lines 8-25), and the evaluation logic makes a comparison to see whether the measured difference values are within the prescribed threshold values and accordingly signals are output which represent only the faults within a predetermined time interval (Col. 11, lines 56-68).

Regarding claim 7, Gorria discloses monitoring constituent parts and parameters of the system (Col. 7, lines 24-36; Col. 5, lines 1-13) at predetermined time intervals by monitoring units and monitoring signals are output, which are checked by the measured-value processing unit and accordingly, signals are output (Col. 8, lines 1-8).

Regarding claim 8, Gorria discloses monitoring geometric arrangement (Col. 8, lines 1-8).

Regarding claims 9 and 10, Gorria does not recognize including liquids used or the bath data. However, Gillard teaches that it is known to optimize analysis of the dye penetrant method by looking for parameters which influence the method (Abstract; Col. 7, lines 27-67, Col. 8, lines 1-14). While Gillard does not expressly recognize testing, developer, and pickling liquids and the bath data as parameters, it would have been obvious design choice in light of Gillard's disclosure. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the monitoring parameters disclosed by Gorria to include influential parameters of the dye penetrant method as taught by Gillard because it is well known in the art and optimizes detection analysis by maximizing detection sensitivity and minimizes background noise.

Regarding claim 11, Gorria discloses the monitoring signals are used for readjusting units (Col. 8, lines 1-8).

Regarding claim 14, Gorria discloses the monitoring signals are used to readjust the image recording device such as the geometric arrangement (Col. 8, lines 1-8).

Regarding claim 12, Gorria discloses recording signals in suitable memories (Col. 6, lines 8-25). While Gorria does not appear to expressly indicate recording onto a medium, it would have been obvious in light of Gorria's disclosure.

Regarding claims 13/1-13/12, Gorria discloses workpiece-related parameters are measured directly and, if appropriate, recorded (Col. 6, lines 8-25).

Regarding claim 15, Gorria discloses calibration of the method and the items of equipment used as well as setting the defect threshold (Col. 11, lines 56-68). Gorria does not appear to recognize passing through a test piece with reference faults. However, Gillard teaches that it is known to pass through test pieces with reference faults to check the operativeness of the overall system (Col. 8, lines 15-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method disclosed by Gorria to include checking the system as taught by Gillard because it is a well-known methodology routinely implemented in the art in order to periodically verify the results of the system and remedy if necessary.

Other Prior Art Cited

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 4,207,593 to Deutsch et al. for automatic recognition and evaluation of optical crack indications on the surface of workpieces;

Art Unit: 2623

U.S. Pat. No. 4,665,738 to Ressler for accelerated solvent resistivity test;

U.S. Pat. No. 5,539,656 to Annigeri et al. for crack monitoring apparatus;

U.S. Pat. No. 5,563,417 to Gillard et al. for automatically characterizing, optimizing, and checking a crack detection analysis method; and

U.S. Pat. No. 6,061,476 to Nichani for image subtraction and dynamic thresholding.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VK
VK
3/1/04

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri